IN-LINE SKATE WITH A SHOCK-ABSORBING DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates to an in-line skate, and particularly to an in-line skate that has a pivoting rear wheel bracket and a shock-absorbing device to significantly reduce impact shock to users.

2. Description of Related Art

With reference to Fig. 5, a conventional in-line skate with a shock-absorbing device has a boot body (not numbered) and a chassis (not numbered). The boot body has a bottom (not numbered), a toe (not numbered) and a heel (not numbered). The chassis has a sole (40), a toe bracket (41), a heel bracket (42), a wheel frame (50), multiple wheels (51) and a shock-absorbing device (60).

The sole (40) is attached to the bottom of the boot body (not numbered) and has a bottom face (not numbered), a front end (not numbered) and a rear end (not numbered). The toe bracket (41) is attached to the bottom face at the front end and has a distal end (not numbered) connected to the wheel frame (50). The heel bracket (42) is attached to the bottom face at the rear end and has the shock-absorbing device (60) attached to and mounted between the heel bracket (42) and the wheel frame (50). The wheel frame (50) has a front end (not numbered) and a rear end (not numbered), and the multiple wheels (51) are rotatably mounted in the wheel frame (50). The front end of the wheel frame (50) is pivotally connected to the distal end of the toe bracket (41). The shock-absorbing device (60) is mounted vertically

between and attached to the rear end of the wheel frame (50) and the heel bracket (42) to keep shocks from being transmitted to the boot of the in-line skate.

However, the conventional in-line skate with the vertically mounted shock-absorbing device has the following drawbacks:

1. The shock-absorbing device only eliminates vibration and shock applied to the sole in a Z direction, wherein the rear end of the sole moves up and down. However, vibration in an X direction is not affected, which causes potential sport injuries to users' ankles.

2. The in-line skate is unstable because the perpendicular distance is quite long, which extends from a pivoting joint between the toe bracket (41) and the wheel frame (50) to the shock-absorbing device (60). Therefore, a little force applied to the in-line skate generates a large torque that impacts the users and causes instability.

The present invention provides a modified in-line skate with a shock-absorbing device to eliminate or obviate the drawbacks of the conventional in-line skate.

SUMMARY OF THE INVENTION

The main objective of the present invention is to provide an in-line skate with a shock-absorbing device that efficiently decreases impact and vibration applied to the in-line skate from being transmitted to a person wearing the skate.

Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description in accordance with

the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a side view in partial section of an in-line skate with a shock-absorbing device in accordance with the present invention;

Fig. 2 is a partially exploded perspective view of a chassis in the in-line skate in Fig. 1;

Fig. 3 is an enlarged side view in partial section of the in-line skate in Fig. 1;

Fig. 4 is a side view of another embodiment of the in-line skate with a shock-absorbing device in accordance with the present invention; and

Fig. 5 is side view of a conventional in-line skate with a shock-absorbing device in accordance with the prior art.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to Figs. 1 and 4, an in-line skate with a shock-absorbing device in accordance with the present invention comprises a boot (not numbered) and a skate chassis (not numbered). The boot has a bottom (not numbered). The chassis is attached to the bottom of the boot and comprises a wheel frame (10), multiple front wheels (12), a rear wheel bracket (20), a rear wheel (24) and a shock-absorbing device (30).

The wheel frame (10) has a top surface (not numbered), a bottom surface (not numbered), a front end (not numbered), a rear end (not numbered), a middle (not numbered) and a front wheel well (11A, 11B). The boot is attached to the top surface of the wheel frame (10). The front wheel well (11A, 11B) is formed on the bottom surface of the wheel frame (10) at

the front end, and the multiple front wheels (12) are mounted rotatably in a line in the front wheel well (11A, 11B).

The rear wheel bracket (20) has a proximal end (21), a distal end (not numbered), a rear wheel well (23) and an optional brake (25) and is attached pivotally to the wheel frame (10) near the middle and extends toward the rear end of the wheel frame (10). The rear wheel well (23) is formed near the distal end. The rear wheel (24) is rotatably mounted in the rear wheel well (23). The optional brake (25) is attached to the distal end of the rear wheel bracket (20), is a cylindrical abrasive block made of rubber and is selectively pressed against the ground to provide a braking capability to the in-line skate.

The shock-absorbing device (30) is attached pivotally to the rear end of the wheel frame (10) and the rear wheel bracket (20) at an angle other than perpendicular and damps the movement of shock and absorbs shock applied to the rear wheel bracket (20). Because the rear wheel bracket (20), the wheel frame (10) and the shock-absorbing device (30) are connected pivotally at angles, the wheel frame (10) and the shock-absorbing device (30) transmit and absorb vertical and horizontal elements of shock to keep the skate stable in movement.

With reference to Figs. 1, 2 and 3, the wheel frame (10) in a preferred embodiment of the in-line skate with a shock-absorbing device in accordance with the present invention has a middle recess (14), two pin holes (15), a pivot pin (16) and an eye bracket (13). The middle recess (14) is defined in the bottom surface in the middle between the front end and the rear end and forms two outer walls (not numbered) in the wheel frame (10).

The two pin holes (15) are defined respectively in the two outer walls and are aligned. The pivot pin (16) is mounted in the pin holes (15). The eye bracket (13) is formed on the bottom surface of the wheel frame (10) near the middle recess (14) between the middle recess (14) and the rear end.

The rear wheel bracket (20) has a top (not numbered), a through hole (22), a vertical limit (not numbered) and an eye bracket (26). The through hole (22) is defined in the proximal end (21) of the rear wheel bracket (20). The proximal end (21) is pivotally mounted in the middle recess (14) so the through hole (22) aligns with the two pin holes (15) in wheel frame (10). The pivot pin (16) passes through the through hole (22) to pivotally attach the rear wheel bracket (20) to the wheel frame (10). The vertical limit is formed on the top of the rear wheel bracket (20) between the proximal end (21) and the distal end to absolutely limit the vertical travel of the rear wheel bracket (20) by abutting the bottom surface of the wheel frame (10). The eye bracket (26) is formed on the top of the wheel bracket (20) forward of the vertical limit.

The shock-absorbing device (30) is a spring-type shock absorber (not numbered), is mounted pivotally and obliquely between the rear end of the wheel frame (10) and the rear wheel well (23) and has a proximal end (not numbered), a distal end (not numbered), two eyes (31, 32) and two pivot pins (33, 34). The eyes (31, 32) are formed respectively on the proximal and distal ends. One eye (31) on the proximal end is connected pivotally to the eye bracket (13) on the wheel frame (10) with one pivot pin (33). The other eye (32) on the distal end is connected pivotally to the eye bracket (26) on

the rear wheel bracket (20) with another pivot pin (34). Thereby, the spring-type shock absorber absorbs vertical components (Z-direction) and longitudinal components (X-direction) of shock applied to the in-line skate.

With reference to Fig. 4, another embodiment of the in-line skate with a shock-absorbing device in accordance with the present has a front wheel well (11B) that is dome-shaped and rotatably accommodates three wheels (12) in line.

The in-line skate with a shock-absorbing device as described has the following advantages.

1. The shock-absorbing device (30) is mounted pivotally and obliquely between the rear end of the wheel frame (10) and the pivotally rear wheel bracket (20) so the shock-absorbing device (30) longitudinally and vertically absorbs shock momentum. Therefore, vibration is significantly and quickly absorbed to eliminate sport injuries to people's ankles caused by vibration.

2. The distance from the pivot point to the farthest wheel is much shorter than the distance in the conventional one in-line skate, since the rear wheel bracket (20) is attached to the wheel frame (10) at the middle recess (14). Since the distance is shorter, the moment applied to the in-line skate by a shock will be less, and the in-line skate will be more stable.

Although the invention has been explained in relation to its preferred embodiment, many other possible modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.